

Notice of Allowability

Application No.

10/085,061

Examiner

Ted M. Wang

Applicant(s)

JIN, GARY QU

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 06/13/2007.
2. ☒ The allowed claim(s) is/are 2,5-9,11,13 and 15-22.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>8/28/2007</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____: |

DETAILED ACTION

Response to Arguments

1. Applicants' amendments and arguments, filed on 06/13/2007, with respect to Claims 2-9, 11, 13, 15-18, 21 and 22 have been fully considered and are persuasive. The 35U.S.C.112 second paragraph rejection has been withdrawn.

Examiner Amendments

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

3. Authorization for this examiner's amendment was given in a telephone interview with Applicant's representative Thomas Adams on August 28, 2007.

4. The application has been amended as follows:

In the amended specification, dated 6/13/2007:

- Paragraph [0017], line 5, after "threshold" insert --- , 0x04000, ---.
- Paragraph [0020], line 5, change

$$C = \begin{cases} (|M| - T) \times \text{sgn}(M) & |M| > T \\ 0 & |M| \leq T \end{cases} \quad \text{to}$$

$$C = \begin{cases} (|M| - T) \times \text{sgn}(M) & |M| \geq T \\ 0 & |M| < T \end{cases}$$

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In the claims:

- Claim 2, line 2, change “IFFT” to --- Inverse Fast Fourier Transform (IFFT) ---.
- Claim 5, lines 1-2, before “signature” insert --- predetermined ---, respectively.
- Claim 6, line 1, before “signature” insert --- predetermined ---.
- Claim 8, line 1, change “DMT” to --- Discrete Multitone (DMT) ---,

line 14, after “wherein said” insert --- predetermined ---, and after “and said”

insert --- predetermined ---,

line 15, before “signature” insert --- predetermined ---,

line 16, change “a” to --- the ---, and

line 18, change

$$C = \begin{cases} (|M| - T) \times \text{sgn}(M) & |M| > T \\ 0 & |M| \leq T \end{cases} \quad \text{to}$$

$$C = \begin{cases} (|M| - T) \times \text{sgn}(M) & |M| \geq T \\ 0 & |M| < T. \end{cases}$$

- Claim 9, line 2, before “signature” insert --- predetermined ---.
- Claim 11, line 1, change “DMT” to --- Discrete Multitone (DMT) ---,
- line 6, before “signature” insert --- predetermined ---,
- line 7, change “the waveform” to --- the modified waveform ---, and
- line 10, change “IFFT” to --- Inverse Fast Fourier Transform (IFFT) --- and before “signature” insert --- predetermined ---.

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- Claim 15, line 6, change “IFFT” to --- Inverse Fast Fourier Transform (IFFT) --- and line 12, before “signature” insert --- predetermined ---.
- Claim 16, line 1, change “DMT” to --- Discrete Multitone (DMT) ---, line 9, change “IFFT” to --- Inverse Fast Fourier Transform (IFFT) --- and change “the” to --- an absolute ---, line 10, before “maximum” insert --- absolute ---.
- Claim 17, line 1, change “DMT” to --- Discrete Multitone (DMT) ---, line 14, before “signature” insert --- predetermined ---, line 15, change “the waveform” to --- the modified waveform ---.
- Claim 19, line 1, change “DMT” to --- Discrete Multitone (DMT) ---, and line 17, change

$$C = \begin{cases} (|M| - T) \times \text{sgn}(M) & |M| > T \\ 0 & |M| \leq T \end{cases} \quad \text{to}$$

$$C = \begin{cases} (|M| - T) \times \text{sgn}(M) & |M| \geq T \\ 0 & |M| < T. \end{cases}$$

- Claim 20, line 1, change “DMT” to --- Discrete Multitone (DMT) ---.
- Claim 21, line 1, change “DMT” to --- Discrete Multitone (DMT) ---, line 16, before “signature” insert --- predetermined ---, line 18, change “the waveform” to --- the modified waveform ---.
- Claim 22, line 1, change “DMT” to --- Discrete Multitone (DMT) ---,

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line 7, after "wherein said" insert --- predetermined ---, and after "generates the"

insert --- predetermined ---,

line 9, change "the waveform" to --- the modified waveform ---, and

line 12, change "IFFT" to --- Inverse Fast Fourier Transform (IFFT) ---.

Allowable Subject Matter

5. Claims 2, 5-9, 11, 13 and 15-22 are allowed.

6. The following is an examiner's statement of reasons for allowance.

- The prior art fails to teach an apparatus/method of Claims 8, 11, 16, 17 and 19-22 that specifically comprises the following:

-- The instant application is deemed to be directed to a non-obvious improvement over the admitted prior art of the instant application and the invention patented in Pat. No. US 6,175,551, US 6,366,555, and EP 0725510 A1. The improvement comprises

With regard claims 8 and 19, "wherein said predetermined signature waveform has fewer samples than said DMT signal, and said predetermined signature waveform is aligned with said signal peak prior to subtraction, said predetermined signature waveform first multiplied by the scaling factor (C) to match said DMT signal, and said scaling factor (C) being determined from said absolute maximal value [M] in accordance with the equation

$$C = \begin{cases} (|M| - T) \times \text{sgn}(M) & |M| \geq T \\ 0 & |M| < T. \end{cases}$$
 " as recited in combination of other limitation as claimed;

With regard claims 11 and 22, "wherein said waveform modifying circuit comprises an IFFT unit to produce said signature waveform $s(n)$ in the time domain, a waveform restriction unit to produce a modified time domain signature waveform signal $s_1(n)$, and FFT unit to produce a frequency domain modified waveform signal $S(k)$ and a spectrum restriction unit to produce a band limited frequency signal $S_1(k)$ which is passed back to said IFFT unit as part of said iterative process." as recited in combination of other limitation as claimed;

With regard claim 16, "wherein said first unit comprises an IFFT unit for generating a time domain signal from a predetermined input waveform, a time domain waveform restriction unit, an FFT unit for producing a modified frequency domain waveform, and a spectrum limiting unit for said modified frequency domain waveform, an output of said spectrum limiting unit being applied to an input of said IFFT unit to permit generation of said signature waveform by means of an iterative process." as recited in combination of other limitation as claimed;

With regard claims 17 and 21, "subtracting said scaled signature waveform from said DMT signal frame in the region of said signal peak so as to reduce said peak to a level substantially equal to said predetermined

threshold value, and wherein said predetermined signature waveform is generated by passing a predetermined waveform through a waveform modifying circuit on an iterative basis until the modified waveform change is insignificant between successive iterations or a maximum number of iterations is reached." as recited in combination of other limitation as claimed; and

With regard claim 20, "subtracting said scaled signature waveform from said DMT signal frame in the region of said signal peak so as to reduce said peak to a level substantially equal to said predetermined threshold value, and wherein the scaled signature waveform is passed through a bit shifter to match the number of bits per sample thereof with the number of bits in the samples of the time domain DMT signal." as recited in combination of other limitation as claimed.

7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M. Wang whose telephone number is (571) 272-3053. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

Ted M Wang

Examiner

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Ted M. Wang

A handwritten signature in black ink, appearing to read 'Ted M. Wang', is positioned to the right of the printed name.